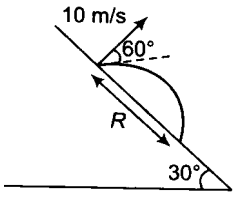
RED Group of Institutions
CHHUCHHAKWAS, JHAJJAR
www.redschoolchk.in

Sample Paper of Scholarship cum Admission Test for Class-XII (Medical)

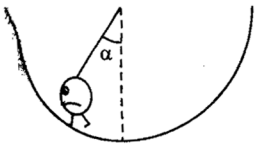
PART–1 (PHYSICS)

1. A projectile is launched with a speed of 10 m./s at an angle 60° with the horizontal from a sloping surface of inclination 30°. The range R is (Take g=10 m/s^2)



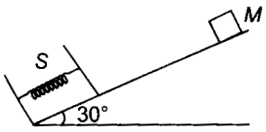
(a) 4.9 m (b) 13.3 m (c) 9.1 m (d) 12. 6 m

2. An insect crawls up a hemispherical surface very slowly. The coefficient of friction between the insect and the surface is $\frac{1}{3}$. If the line joining the centre of the hemispherical surface to the insect makes an angle α with the vertical the maximum possible value of α is given by



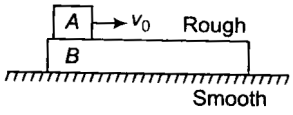
(a) $\cot\alpha = 3$ (b) $\tan\alpha = 3$ (c) $\sec\alpha = 3$ (d) $\operatorname{cosec}\alpha = 3$

3. An ideal massless spring S can be compressed 1 m by a force of 100 N in equlibrium. The same spring is placed at the bottom of a frictionless inclined plane inclined at 30° to the horizontal. A 10 kg block M is released from rest at the top of the incline and is brought to rest momentarily after compressing the spring by 2m. If g= 10 m/s^2 , what is the speed of mass just before it touches the spring ?



(a) $\sqrt{20}m/s$ (b) $\sqrt{30}m/s$ (c) $\sqrt{10}m/s$ (d) $\sqrt{40}m/s$

4. In a two block system an initial velocity v_0 with respect to ground is given to block A.



(a) The momentum of block A is not conserved.
(b) The momentum of system of blocks A and B is conserved.
(c) The increase in momentum of B is equal to the decrease in momentum of block A
(d) All of the above

5. A rigit body rotates about a fixed axis with variable angular velocity equal to $\alpha - \beta t$, at the time t, where α, β are constants. The angle through which is rotates before it stops.

(a) $\frac{\alpha^2}{2\beta}$ (b) $\frac{\alpha^2 - \beta^2}{2\alpha}$ (c) $\frac{\alpha^2 - \beta^2}{2\beta}$ (d) $\frac{(\alpha - \beta)\alpha}{2}$

PART–2 (CHEMISTRY)

6. A mixture of NO_2 and N_2O_4 has a vapour density of 38.3 at 300 K. What is the number of moles of NO_2 in 100 g of the mixture
a) 0.043 b) 4.4 c) 3.4 d) 0.437

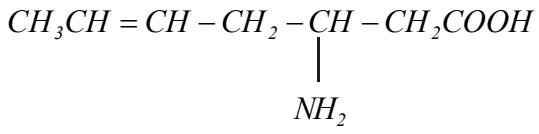
7. Which of the following is not a water softener?
a) Calgon b) Permutit c) Na_2CO_3 d) Na_2CO_4

8. In group IVA or 14 of the extended form of the periodic table with increase in atomic numbner, the metallic character:
a) Ge > Pb > Sn b) Ge > Sn > Pb
c) Pb > Ge > Sn d) Pb > Sn > Ge

9. A light whose frequency is equal to 6×10^{14} Hz is incident on a metal whose work function is 2eV ($h = 6.63\times10^{-34}$ Js, leV = 1.6×10^{-19}J). The maximum energy of electrons emitted will be.

a) 2.49e V b) 4.49 eV c) 0.49 eV d) 5.49 eV

10. The IUPAC name of the following is:



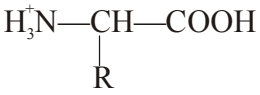
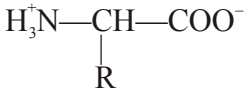
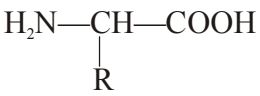
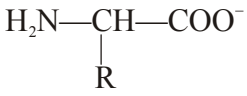
a) 3 - aminohept -5-enoic acid b) 5-aminohex-2-ene-carboxylic acid
c) 3-amino-δ - heptenoic acid d) 5- aminohept-2-enoic acid

PART–3 (BIOLOGY)

11. Protein portion of enzyme is called :-
a) Co-factor b) Apoenzyme c) Co-enzyme d) NAD

12. Which one of the following is not a living fossil?
a) *Peripatus* b) King crab c) *Sphenodon* d) *Archeopteryx*

13. Fruit of mustard is
a) Siliqua b) Achene
c) Nut d) Cypsella

14. Which of the Amino acid is in zwitterionic form :-
a) 
b) 
c) 
d) 

15. The theory of random genetic drift was proposed by :
a) Sewall Wright b) Hardy-Weinberg
c) R A Fisher d) Mayer